What is claimed is:

1. A pressure detecting device comprising:

a semiconductor substrate for outputting an electrical signal in accordance with pressure applied in a thickness direction of the semiconductor substrate, wherein the semiconductor substrate has a first electrode on a front surface thereof and a second electrode on a back surface thereof, the electrical signal being output through the first electrode and the second electrode when the pressure is applied;

a pressure transmitting member that is equipped at the front surface side of the semiconductor substrate and that transmits pressure to the front surface side of the semiconductor substrate, wherein the pressure transmitting member has electrically conductive properties, wherein the first electrode is electrically connected to the pressure transmitting member;

a housing in which the semiconductor substrate and the pressure transmitting member are accommodated; and

a lead member electrically independent of the housing and accommodated in the housing at the back surface side of the semiconductor substrate, wherein the lead member and the second electrode are electrically connected to each other.

2. The pressure detecting device according to claim 1, wherein the first electrode is disposed at the peripheral portion on the front surface of the semiconductor substrate, the pressure from the pressure transmitting member is transmitted to the

center portion on the front surface of the semiconductor substrate, and the first electrode and the pressure transmitting member are electrically connected to each other through conductive adhesive material.

3. The pressure detecting device according to claim 2, wherein the first electrode is designed in a ring shape.

4. The pressure detecting device according to claim 1, wherein:

the semiconductor substrate is an N-type silicon substrate having a plane direction corresponding to (110)-plane;

the pressure from the pressure transmitting member is transmitted to a center portion on the front surface of the semiconductor substrate;

a first N-type diffusion layer is equipped at a peripheral portion on the front surface of the silicon substrate;

the semiconductor substrate includes a P-type diffusion gage layer that is continuously formed thereon so as to extend from a vicinity of the first N-type diffusion layer through the center portion of the N-type silicon substrate to the other peripheral portion;

a second N-type diffusion layer is equipped on the back surface of the N-type silicon substrate;

the P-type diffusion gage layer is electrically connected to the first electrode at the other peripheral portion on the

front surface of the N-type silicon substrate;

the second N-type diffusion layer is electrically connected to the second electrode on the back surface of the N-type silicon substrate;

a third electrode for electrically connecting the first N-type diffusion layer; and

the P-type diffusion gage layer is equipped at the peripheral portion on the front surface of the N-type silicon substrate.

5. The pressure detecting device according to claim 4, wherein the P-type diffusion gage layer is shaped so that the longitudinal direction of resistance is along the <110> crystal axis direction of the N-type silicon substrate at the center portion on the front surface of the N-type silicon substrate.

6. The pressure detecting device according to claim 1, wherein:

the semiconductor substrate is a P-type silicon substrate having plane direction corresponding to (110)-plane;

the pressure from the pressure transmitting member is transmitted to the entire portion on the front surface of the P-type silicon substrate;

a first P-type diffusion layer electrically-connected to the first electrode is equipped on the front surface of the P-type silicon substrate;

a second P-type diffusion layer electrically-connected

to the second electrode is equipped on the back surface of the P-type silicon substrate; and

the first P-type diffusion layer and the second P-type diffusion layer are respectively disposed at one peripheral portion and the other peripheral portion which confront each other through a center portion of the P-type silicon substrate along the <110> crystal axis direction.

7. The pressure detecting device according to claim 6, wherein the P-type silicon substrate is designed in a rectangular planar shape so that the <110> crystal axis direction thereof is along a diagonal direction of the P-type silicon substrate and the first P-type diffusion layer and the second P-type diffusion layer confront each other along the diagonal direction of the P-type silicon substrate.

8. The pressure detecting device according to claim 1, wherein:

the semiconductor substrate is a P-type silicon substrate having a plane direction corresponding to (110)-plane;

the pressure from the pressure transmitting member is transmitted to a center portion on the front surface of the P-type silicon substrate;

a P-type diffusion gage layer electrically-connected to the first electrode at a peripheral portion of the P-type silicon substrate is on the front surface of the P-type silicon substrate;

the P-type diffusion gage layer is shaped to extend from the peripheral portion on the front surface of the P-type silicon substrate to the other peripheral portion along the <110> crystal axis direction;

an N-type diffusion layer electrically-connected to the first electrode is formed at the peripheral portion on t he front surface of the P-type silicon substrate so as to be located between the P-type diffusion gage layer and the inside of the P-type silicon substrate to cover the P-type diffusion gage layer except for an area corresponding to the end portion of the P-type diffusion gage layer at the other peripheral portion side; and

a P-type diffusion layer electrically-connected to the second electrode is equipped on the back surface of the P-type silicon substrate.

9. The pressure detecting device according to claim 4, wherein:

the pressure transmitting member is disposed on the front surface of the semiconductor substrate to face the center portion; and

the first electrode is disposed to be nearer to the peripheral portion side than the pressure transmitting member and electrically connected to the pressure transmitting member through the conductive adhesive material.

10. The pressure detecting device according to claim 9,

wherein the first electrode is electrically connected to the housing through the pressure transmitting member, whereby the first electrode is allowed to be externally electrically connected.

11. The pressure detecting device according to claim 10, wherein the pressure transmitting member and the housing are equipped with a conductive layer having electrical resistance lower than the pressure transmitting member and the housing.

12. The pressure detecting device according to claim 1, wherein the first electrode is electrically connected to the housing through the pressure transmitting member, whereby the first electrode is allowed to be externally electrically connected.

13. The pressure detecting device according to claim 1, wherein the electrical signal output from the first electrode is externally output through the pressure transmitting member and the housing.

14. The pressure detecting device according to claim 1, wherein:

the housing comprises a first portion, a second portion having smaller thermal conductivity than the first portion, and an electrically conductive partition portion through which the first portion and the second portion are separated from

each other;

the semiconductor substrate is accommodated in the first portion of the housing;

the pressure transmitting member is accommodated in the second portion of the housing so that pressure is transmitted through the partition portion to the front surface of the semiconductor substrate;

the first electrode of the semiconductor substrate is electrically connected to the partition portion of the housing; and

the lead member and the second electrode of the semiconductor substrate are electrically connected to each other.

15. The pressure detecting device according to claim 14, wherein the first portion of the housing is formed of metal, and the second portion is formed of ceramic material.

16. The pressure detecting device according to claim 14, wherein the pressure transmitting member has smaller thermal conductivity than the first portion of the housing.

17. The pressure detecting device according to claim 14 , wherein the pressure transmitting member is formed of same material as the second portion of the housing.

18. A pressure detecting device comprising:

a semiconductor substrate for outputting an electrical signal in accordance with pressure applied in a direction along which both front and back surfaces of the semiconductor substrate are spaced from each other;

a pressure transmitting member that is equipped at the front surface side of the semiconductor substrate and transmits pressure to the front surface side of the semiconductor substrate, and;

a housing in which the semiconductor substrate and the pressure transmitting member are accommodated, wherein the housing comprises a first portion, a second portion having smaller thermal conductivity than the first portion, and an electrically conductive partition portion through which the first portion and the second portion are separated from each other,

wherein the semiconductor substrate is accommodated in the first portion of the housing,

wherein the pressure transmitting member is accommodated in the second portion of the housing so that pressure is transmitted through the partition portion to the front surface of the semiconductor substrate,

wherein the semiconductor substrate has a first electr ode on the front surface thereof and a second electrode on the back surface thereof, an electrical signal being output from the first electrode and the second electrode when pressure is applied, wherein the first electrode of the semiconductor substrate is

electrically connected to the partition portion of the housing; and

wherein a lead member electrically independent of the housing is accommodated at the back surface side of the semiconductor substrate in the housing, and the lead member and the second electrode of the semiconductor substrate are electrically connected to each other.

19. The pressure detecting device according to claim 18, wherein the first portion of the housing is formed of metal, and the second portion is formed of ceramic material .

20. The pressure detecting device according to claim 18, wherein the pressure transmitting member has smaller thermal conductivity than the first portion of the housing.

21. The pressure detecting device according to claim 20, wherein the pressure transmitting member is formed of the same material as the second portion of the housing.